

Name: _____

Introduction:

Environment Canada collects climate data from 2200 weather stations throughout the country. When global climate data is gathered for the construction of a climatograph, it is usually collected over a 30 year period with the ending year as a decade year (e.g. 1971 – 2000). Because of this standard, you can easily compare climatographs and climate data from various places around the world.

Constructing climatographs using historical and recent climate data from Environment Canada weather stations can help us compare people's living conditions now and in the past.

Purpose

- To construct and use climatographs as tools to try to find and explain changes in the climate of Toronto, Ontario.

Procedure

Construct one climatograph for each of the two 30 year sets of data provided below. (This means that you will make one climatograph for Toronto's climate data from 1840–1859 and a second climatograph for the data from 1971-2000.)

While making the two climatographs, ensure you do the following:

- Use graph paper. Draw the climatographs by hand.
- When you determine the range (maximum and minimum) of the average monthly temperature data, select the range that will accommodate BOTH sets of data. Use this extended range for BOTH climatographs. [i.e. The maximum temperature reached for both sets of data is 22.2°C and the minimum reached for both sets of data is -5.9°C so BOTH climatographs should show this temperature range.]
- When you determine the range (maximum and minimum) of the average monthly precipitation data, select the range that will accommodate BOTH sets of data. Use this extended range for BOTH climatographs.
- Be sure to follow the directions for writing a separate title for each climatograph.

Data for the Climatographs

Table 1: Climate Data for Toronto, ON, 1840-1859

	J	F	M	A	M	J	J	A	S	O	N	D
Average Monthly Temperatures (°C)	-4.6	-5.9	-1.1	5	10.7	16.2	19.5	18.9	14.4	7.3	2.5	-3.3
Average Monthly Precipitation (mm)	36.0	26.0	39.0	63.0	84.0	81.0	89.0	74.0	104.0	57.0	79.0	41.0

Table 2: Climate Data for Toronto, ON, 1971-2000

	J	F	M	A	M	J	J	A	S	O	N	D
Average Monthly Temperatures (°C)	-4.2	-3.2	1.3	7.6	14.2	19.2	22.2	21.3	17.0	10.6	4.8	-0.9
Average Monthly Precipitation (mm)	61.0	51.0	66.0	70.0	73.0	72.0	68.0	80.0	83.0	65.0	76.0	71.0

Climatographs

- Attach the two climatographs you have constructed on graph paper to this lab report. Use the climatographs to answer the following questions.

Analysis Questions

1. Look at the climatograph for 1840-1859.
 - Describe any monthly temperature and precipitation changes and/or patterns you observe.
 - Is there a relationship between temperature and precipitation? If you think there is a relationship, describe it. If you do not think there is a relationship, explain why the data supports your answer.
2. Look at the climatograph for 1971-2000.
 - Describe any monthly temperature and precipitation changes and/or patterns you observe.
 - Is there a relationship between temperature and precipitation? If you think there is a relationship, describe it. If you do not think there is a relationship, explain why the data supports your answer.

Compare the two climatographs and describe the similarities and differences between them.

Forming Conclusions

Based on what you know about climate, list at least three (3) factors that could have affected the climate between 1850 and 2000.

Would you feel confident making a statement about climate change in Toronto based on the climatograph information? If you answered “yes”, explain why and give the statement you would make. If you answered “no”, explain why and indicate what other information you would require before feeling confident about issuing a statement about climate change in Toronto.

Why are climatographs constructed for data averaged over 30 years rather than for data gathered over 1 year?

Inquiry Activity: Toronto, Then and Now Rubric

/8 Knowledge & Understanding

- /2 Correct temperature scale on each climatograph
- /2 Correct precipitation scale on each climatograph
- /2 Temperature values plotted as a line graph
- /2 Precipitation values plotted as a bar graph

/8 Application

- /3 Describe factors which could affect climate
- /4 Describe patterns and trends in climatographs
- /1 Explain why climatographs use 30 year average

/6 Thinking

- /2 Compares similarities and difference of climatographs
- /4 Explains relationship between temperature and precipitation using a climatograph

/8 Communication

- /2 Appropriate titles and labels
- /2 Appropriate legends
- /2 Neatness, legibility of graphs
- /2 Written answers are in full sentences and use appropriate vocabulary

Total: /30